DEPARTMENT OF CHEMISTRY AND PHYSICS
CHEM 1070 GENERAL CHEMISTRY

CHEM 1070. INTRODUCTORY CHEMISTRY. (3-3-0). Principles of chemistry for students who plan to take 1080 as a terminal chemistry course. Topics include atomic and molecular structure, chemical bonding and properties of gases, liquids and solids. Prerequisite: placement in Mathematics 1020. (May not receive credit for both Chemistry 1070 and Science 1010).

Course Content

(Note: These do not correspond 1-to-1 with the chapters.

1. Chemistry Methods and Measurements
   a. Scientific method, properties of matter
   b. Measurement, scientific notation, quantities
2. Composition and Structure of the Atom
   a. Atomic structure, evidence, theory
3. Elements, Atoms, Ions, and the periodic Table
   a. Periodic Table, electron arrangement
   b. Octet rule, periodic trends
4. Structure and Properties of Ionic and Covalent Compounds
   a. Chemical bonding, formulas and names
   b. Compound properties, Lewis structures
5. Calculations and the Chemical Equation
   a. The mole concept applied to compounds
   b. Chemical equations, balancing and calculations
6. States of Matter: Gases, Liquids and Solids
   a. Gaseous state, gas laws, environmental issues
   b. Liquid state, blood gases, respiration
   c. Solid state
7. Reactions and Solutions
   a. Chemical reactions
   b. Solutions, properties, concentration properties
   c. Water as a solvent, electrolytes in body fluids
8. Chemical and Physical Change: Energy, Rate, and Equilibrium
   a. Thermodynamics, energy change in reactions
   b. Kinetics, Equilibrium
9. Charge-Transfer Reactions
   a. Acids and bases, pH
   b. Acid-base reactions, buffers
   c. Oxidation-reduction processes
10. The Nucleus, Radioactivity, and Nuclear Medicine
    a. Radioactivity, balanced nuclear equations
    b. Radioisotope properties, medical applications
    c. Nuclear power, radiocarbon dating
    d. Biological effects of radiation, measurement
11. Introduction to Organic Chemistry: Saturated Hydrocarbons
    a. Carbon chemistry
    b. Alkanes and cycloalkanes, reactions
12. Unsaturated Hydrocarbons: Alkenes. Alkynes, and Aromatics
    a. Alkenes and alkynes, structure, properties, nomenclature, isomers, in nature, reactions
    b. Aromatic hydrocarbons

Course Goals

This course is intended:

1. To introduce the student to basic principles of chemistry.
2. To encourage students to identify aspects of chemistry in their everyday life.
3. To afford students the knowledge necessary to understand chemical principles in their chosen profession.

Course Objectives

The student who successfully completes this course should be able:

1. To provide appropriate names, formulas and structures for atoms, ions and molecules.
2. To predict simple chemical and physical behavior based on structure.
3. To use general chemical concepts to explain specific behavior.
4. To solve problems both qualitatively and quantitatively.
5. To demonstrate qualitative awareness of modern concepts for which advanced mathematic reasoning is required.

Textbook:

Text: McMurry, *Fundamentals of General, Organic and Biological Chemistry w/ Mastering Chemistry* 5th Custom Edition, Pearson

Disability Statement It is the policy of NSU to accommodate students with disabilities, pursuant to federal law, state law, and the University's commitment to equal educational opportunities. Any student with a disability who needs accommodations, for example in seating placement or in arrangements for examinations, should inform the instructor at the beginning of the course. Students with disabilities are encouraged to contact the Office of Disability Support, which is located in Kyser Hall, Room 239, telephone (318)357-4460 or TTD (318)357-4393.